II. CLAIMS

1. (Cancelled)

C1 2. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that it comprises a substrate insulating layer between the substrate and the first conducting layer.

3. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the first conducting layer forms an interconnecting wire between the inductor coil and the capacitor electrode.

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that, the substrate insulating layer is arranged as a suspending structure for the capacitor electrode and the inductor coil.

8. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that, the gap between the capacitor electrodes is an air gap.

9. (previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the dielectric insulating layer is used as a sacrificial layer in creating the air gap.

10. (Original) An integrated tunable RF resonator according to Claim 1, **characterized** in that a thin insulating layer is deposited on top of the capacitor electrode to prevent the galvanic contact between electrodes.

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11. (Original) An integrated tunable RF resonator according to Claim 10, **characterized** in that a thin insulating layer on top of the capacitor electrode covers the electrode only partly.

12. (Previously amended) An integrated tunable RF resonator according to Claim 43, **characterized** in that the dielectric insulating layer on top of the capacitor electrode is silicon nitride.

13. (Previously amended) An integrated tunable RF resonator according to Claim 43, **characterized** in that the dielectric insulating layer on top of the capacitor electrode is polymer.

14. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the second capacitor electrode is the ground electrode.

15. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the conducting layer interconnecting the inductor and the capacitor and/or the second capacitor electrode is metal film.

16. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the material of which the first conducting layer is constructed is selected from the group consisting of the following materials:
- refractory metal, such as Mo, W or TiW,
- metal, such as Au or Cu, or
- doped electrode in bulk silicon.

17. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the material of which the second conducting layer is constructed is selected from the group consisting of the following materials:
- metal, such as Au or Cu,
- polysilicon, or
- monocrystalline silicon.

18. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the third conducting layer is metal.

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19. (Previously amended) An integrated tunable RF resonator according to claim 43 , **characterized** in that the third conducting layer is a electroplated layer with a substantially larger thickness than the thickness of the first and second conducting layers.

20. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is arranged with the second conducting layer and an electro-plated metal layer on top of the conducting layer.

21. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is arranged to be adjustable.

22. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil has several segments, and it is arranged to be adjustable by means to change the number of active segments in the coil.

23. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the segments of the inductor coil are changed by a micro-electro-mechancial switch realized in the same fabrication process with capacitors and inductors.

24. (Previously amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is a planar inductor coil.

25. (Cancelled)

26. (Cancelled)

27. (Previously amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that a tuning signal is arranged to be fed through the tuning electrode.

C1 cont.

28. (Previously amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that, said second capacitor electrode is metal thin film.

29. (Previously amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that the second capacitor electrode is folded and/or corrugated to at least two levels with respect to the first capacitor electrode.

30. (Original) A micromechanical tunable RF resonator according to claim 29, **characterized** in that the vertical portions of the folds and/or corrugates are fabricated thinner than the lateral portions of the second capacitor electrode.

31. (Cancelled)

32. (Previously amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that, the said substrate is a semiconductor material.

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

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43. (Currently amended) An integrated tunable RF resonator comprising an integrated inductor and a micromechanical tunable capacitor connected in series or in parallel, comprising

- a substrate (3),

- a substrate insulating layer (5),

- a first conducting layer (4) for forming a first capacitor electrode (8) and control electrodes (9) for applying a control voltage,

- a second conducting layer (6) for forming a second capacitor electrode (11a, 11b) that is movable with relative to the first capacitor electrode (8);

a third conducting layer for forming at least part of the inductor coil;

- wherein said control electrodes (9) are used to create an electrostatic force to said movable first electrode (8) for tuning the capacitance of the capacitor,

characterized in that

- a dielectric insulating layer (7) is used to at least partly cover said first capacitor electrode (8) to prevent the galvanic contact between said first capacitor electrode (8) and said second capacitor electrode (11),

wherein a portion of an exterior surface of said substrate (~~7~~3) is at least partly removed at the location of the said inductor coil (1) and the said first capacitor electrode (8~~),~~ and further wherein said substrate (3) is removed up to said first capacitor electrode or up to said substrate insulating layer (5)

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said substrate insulating layer (5) is arranged as a suspended structure for the said first capacitor electrode (8) and the inductor coil (1).

44. (Previously added) An integrated tunable RF resonator according to claim 43, **characterized** in that the dielectric insulating layer (7) is preventing the galvanic contact between the first conducting layer (8) and the second conducting layer (6).

45. (Currently amended) A micromechanical tunable capacitor, comprising at least of one counter electrode (601) on a first plate of the capacitor, and at least one active electrode (602) and at least one tuning electrode (603, 604) on a second capacitor plate, **characterized** in that,

- each of the ~~said~~ electrodes (601, 602, 603, 604) is a metal film formed on a substrate (3),

- at least one of the capacitor plates is arranged to be a flexible and elastic structure,

- the said electrodes on at least one of the capacitor plates are covered by an insulating layer (7) to prevent a galvanic

contact between the said electrodes on the first and second capacitor plates; and

wherein a portion of an exterior surface of said substrate (3) is at least partly removed at the location of said first capacitor electrode (8), wherein said substrate (3) is removed up to said first capacitor electrode (8).

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46. (Previously added) A micromechanical tunable capacitor according to claim 45, **characterized** in that the active electrode (602) is arranged to be positioned further from clamped points and/or sides than at least one tuning electrode (603, 604).

47. (Previously added) A micromechanical tunable capacitor according to claim 45, **characterized** in that the dielectric gap (610) is arranged to be narrower between at least one active electrode (602) and at least one counter electrode (601) than between at least one tuning electrode (603, 604) and at least one counter electrode (601).

48. (Previously added) An integrated tunable RF resonator according to claim 43, **characterized** in that a portion of said second conducting layer is used for forming at least part of the inductor coil.

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49. (Previously added) A micromechanical tunable capacitor according to claim 45, **characterized** in that said active electrode and said at least one tuning electrode are formed in the same layer.

50. (New) A micromechanical tunable capacitor according to claim 45, **characterized** in that said capacitor plate having a flexible and elastic structure is electrically connected to the same potential as the substrate.

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51. (New) An integrated tunable RF resonator, according to claim 43, **characterized** in that the moveable second capacitor electrode is electrically connected to the same potential as the substrate.

52. (New) An integrated tunable RF resonator, according to claim 43, **characterized** in that the dielectric insulating layer is used as a sacrificial layer to create an air gap between said first capacitor electrode and said second capacitor electrode.